

DIY Toy: Skip & Spin



Create a homemade twist on a retro toy that also demonstrates centripetal force!

Kit contains:

- 1 bottle of water
- rope
- vinyl tubing

You will need: a nail, a sharp pencil, tape, dried beans or rice, and decorating supplies (optional).



MORTON GROVE PUBLIC LIBRARY

6140 Lincoln Avenue, Morton Grove, IL 60053

Youth Info Desk: 847-929-5102 | mgpl.org

INSTRUCTIONS

Step 1. Drink or drain your bottle of water. Let the bottle and cap dry completely.

Step 2. Use your nail to poke a hole in the center of the bottle cap. Make the hole a little bit wider with the point of your sharpened pencil, but do not stick the pencil all the way through.

Step 3. Use your pencil to prod one end of the rope through the hole in the bottle cap. Tie a mega-knot on the inside of the cap so the rope cannot pull out.



Step 4. Fill the bottle $\frac{1}{3}$ to $\frac{1}{2}$ of the way with dried beans or rice. Then screw the cap back on.



Step 5. Tape the ends of your vinyl tubing together to form a ring.



Step 6. Tie the loose end of the rope to the ring. Add some tape for extra reinforcement.

Step 7. Decorate if desired.



TIME TO PLAY!

Your Skip & Spin will work best on a tile floor or outside on concrete. Give yourself plenty of space! Put your foot through the ring and let it settle around your ankle. (You might need to take off your shoe.)

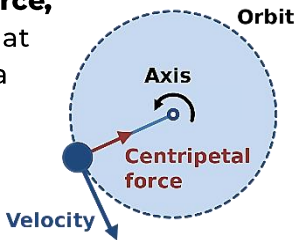


Swing your Skip & Spin leg in a wide circle toward your other foot to get the bottle flying outward with the rope taut. This might take a few

tries. When the rope and bottle spin toward your empty foot, jump over it like you're skipping rope. Keep going until you've had sufficient fun.

Optimize Your Toy: Try increasing and decreasing the dried beans or rice in the bottle. How does weight affect your Skip & Spin?

Centripetal Force: Your Skip & Spin demonstrates **centripetal force**, the “center-seeking” force that keeps an object traveling in a circle around a fixed center. Once in motion, the velocity of your bottle is always **orthogonal** (forms a right angle) with the the taut rope.



PBS Learning has a good video explanation of centripetal force: <https://tinyurl.com/yfh72k53>

Pop Culture Note: The branded version of this toy, the Skip-It, was invented in the 1960s and garnered peak popularity in the '80s and '90s. The commercial was an earworm that may still haunt your grown-ups: <https://tinyurl.com/waaj5xah>

Source: babbleddabbledo.com/homemade-toy-idea-diy-skip-it/